

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 April 2002 (18.04.2002)

PCT

(10) International Publication Number  
WO 02/030337 A3

(51) International Patent Classification<sup>7</sup>: A61F 2/44

(21) International Application Number: PCT/US01/31821

(22) International Filing Date: 11 October 2001 (11.10.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/239,368 11 October 2000 (11.10.2000) US

(71) Applicant and

(72) Inventor: MASON, Michael, D. [US/US]; 165 Claybrook Road, Dover, MA 02030-2116 (US).

(74) Agents: O'SHEA, Patrick, J. et al.; Samuels, Gauthier & Stevens, LLP, Suite 3300, 225 Franklin Street, Boston, MA 02110 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

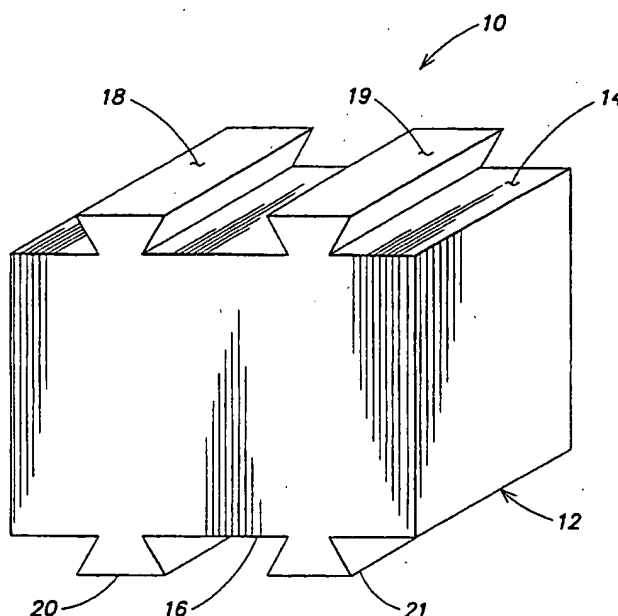
**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
25 July 2002

[Continued on next page]

(54) Title: GRAFTLESS SPINAL FUSION DEVICE



(57) Abstract: A graftless spinal implant for mechanically attaching two adjacent vertebrae includes a body having first and second opposite surfaces. The first and second surfaces include at least one protruding member for securing the body to adjacent vertebrae, wherein the exterior surfaces of the body and the first and second protruding members include a bioactive coating. The bioactive coating can be selected from coatings such as for example, hydroxyapatite. The exterior bioactive coating facilitates the ongrowth/ingrowth of vertebral bone between the implantable spinal fusion device and adjacent vertebrae. Advantageously, this allows the device to avoid the use of a bone graft and/or bone growth agents.

WO 02/030337 A3



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

Int. onal Application No

PCT/US 01/31821

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61F2/44

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 317 972 A (ASAHI OPTICAL CO LTD) 31 May 1989 (1989-05-31) claims 1-5,7; figures column 2, line 24 - line 25	1-4,6,7
X	DE 39 11 610 A (BOSCH GMBH ROBERT) 18 October 1990 (1990-10-18) claims 1,5,6; figures 2,3	1,2,5-7
X	US 6 113 638 A (WILLIAMS LYTTON A ET AL) 5 September 2000 (2000-09-05) figures 1-5A column 7, line 8 - line 52	1,2,4,6, 7
A	---	5
	--- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

13 May 2002

Date of mailing of the international search report

17/05/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Stach, R

# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/US 01/31821

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 93 22990 A (ABREKTSSON BJOERN ;CARLSSON LARS (SE); WENNBERG STIG (SE); ASTRA A) 25 November 1993 (1993-11-25) claims 1,2,16,19; figures 13-19 -----	1,5
A	EP 0 421 485 A (PFIZER HOSPITAL PROD) 10 April 1991 (1991-04-10) claim 1; figures 1-4 -----	1,5
A	US 6 096 080 A (NICHOLSON JAMES E ET AL) 1 August 2000 (2000-08-01) cited in the application claims 2,3; figures 1-8 -----	1,3-5

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/31821

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0317972	A	31-05-1989	JP 1136655 A	29-05-1989
			JP 1698367 C	28-09-1992
			JP 3063898 B	03-10-1991
			DE 3869340 D1	23-04-1992
			EP 0317972 A1	31-05-1989
			US 4946378 A	07-08-1990
DE 3911610	A	18-10-1990	DE 3911610 A1	18-10-1990
			WO 9011740 A1	18-10-1990
			DE 59000763 D1	25-02-1993
			EP 0465514 A1	15-01-1992
			ES 2038517 T3	16-07-1993
US 6113638	A	05-09-2000	AU 2873500 A	14-09-2000
			EP 1161205 A1	12-12-2001
			WO 0049977 A1	31-08-2000
WO 9322990	A	25-11-1993	AT 175094 T	15-01-1999
			AU 680819 B2	14-08-1997
			AU 4099093 A	13-12-1993
			CA 2136100 A1	25-11-1993
			DE 69322863 D1	11-02-1999
			DE 69322863 T2	01-07-1999
			DK 642328 T3	30-08-1999
			EP 0642328 A1	15-03-1995
			ES 2127821 T3	01-05-1999
			FI 945428 A	18-11-1994
			GR 3029808 T3	30-06-1999
			JP 7506745 T	27-07-1995
			NO 944367 A	15-11-1994
			NZ 252360 A	24-03-1997
			WO 9322990 A1	25-11-1993
			US 6102954 A	15-08-2000
EP 0421485	A	10-04-1991	US 4714469 A	22-12-1987
			AT 69370 T	15-11-1991
			AU 588724 B2	21-09-1989
			AU 1219188 A	01-09-1988
			CA 1254352 A1	23-05-1989
			CA 1261104 A2	26-09-1989
			DE 3866141 D1	19-12-1991
			DE 8802202 U1	01-09-1988
			DE 8806725 U1	01-09-1988
			EP 0284210 A2	28-09-1988
			EP 0421485 A1	10-04-1991
			ES 2027759 T3	16-06-1992
			GR 3003127 T3	17-02-1993
			IE 880284 L	26-08-1988
			JP 63229046 A	22-09-1988
			ZA 8801331 A	29-11-1989
US 6096080	A	01-08-2000	US 6241769 B1	05-06-2001
			AU 3787999 A	23-11-1999
			BR 9910250 A	09-01-2001
			CA 2331717 A1	11-11-1999
			EP 1076536 A1	21-02-2001
			WO 9956676 A1	11-11-1999
			US 6261293 B1	17-07-2001

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int lonal Application No

PCT/US 01/31821

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6096080	A	US 6241733 B1	05-06-2001
		US 6258094 B1	10-07-2001
		US 6261295 B1	17-07-2001
		US 2001031967 A1	18-10-2001
		US 2002032483 A1	14-03-2002